



Seasonal Influenza Infection CDNA National Guidelines for Public Health Units

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2.0	7 May 2015	CDNA	Addition of section on “Cases among travellers on aeroplanes”.
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The Series of National Guidelines (‘the Guidelines’) have been developed by the Communicable Diseases Network Australia (CDNA) and noted by the Australian Health Protection Principal Committee (AHPPC). Their purpose is to provide nationally consistent guidance to public health units (PHUs) in responding to a notifiable disease event.

These guidelines capture the knowledge of experienced professionals and provide guidance on best practice based upon the best available evidence at the time of completion.

Readers should not rely solely on the information contained within these guidelines. Guideline information is not intended to be a substitute for advice from other relevant sources including, but not limited to, the advice from a health professional. Clinical judgement and discretion may be required in the interpretation and application of these guidelines.

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Seasonal Influenza Infection

CDNA National Guidelines for Public Health Units

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1. Summary

Public health priority

<i>Priority Classification</i>	<i>Public health response timeline</i>	<i>Data entry timeline</i>
Urgent	Following identification of a novel subtype or an untypable influenza isolate, act as soon as possible – respond within 24 hours	Within one working day
High	Outbreaks in high-risk settings*, act as soon as possible – respond within one working day	Within three working days
Routine	Individual cases in most community settings, action as part of routine duties	Within five working days

* High-risk settings: boarding schools, special needs schools for children with disabilities, residential care facilities, Aboriginal and Torres Strait Islander communities where practicable, and health care workers in high risk settings (see [Section 12 - Special situations](#)).

Case management

Cases are managed individually by their health care providers, with a focus on those who are at increased risk of severe disease or serious complications. Management may include appropriate use of antiviral medications.

Public health action focuses on follow-up of cases infected with novel influenza subtypes or untypable isolates. The advice and support of the Public Health Units should be sought during outbreaks in high-risk settings (see [Section 12 - Special situations](#)).

Contact management

Contact management is not routinely undertaken for seasonal influenza.

In specific high-risk settings* (see [Section 1 – Summary: public health priority](#)), persons at increased risk of severe disease should be advised to seek early medical care if symptoms develop.

Note

This Guideline applies to seasonal influenza and not to avian or pandemic influenza.

A separate guideline for public health responses to avian influenza can be found on the [Department of Health website](#) (www.health.gov.au/cdnasongs).

Further information on pandemic influenza can be found in the [Australian Health Management Plan for Pandemic Influenza \(AHMPPI\)](#), (www.health.gov.au/internet/main/publishing.nsf/content/ohp-ahmppi.htm)

2. The disease

Infectious agents

Influenza viruses belong to the family *Orthomyxoviridae*, and are enveloped single-stranded ribonucleic acid (RNA) viruses. There are three types of influenza viruses, A, B and C that can infect humans. They can be distinguished by differences in viral proteins in the envelope.

Seasonal influenza is an acute respiratory infection generally caused by influenza A and/or B viruses which circulate globally causing seasonal epidemics. Influenza C virus is detected less frequently and usually causes mild infections. Therefore it is not included in routine influenza tests.

The envelopes of influenza viruses contain two surface proteins, hemagglutinin (H) and neuraminidase (N). Influenza A viruses can be classified into subtypes according to combinations of these H and N proteins. The influenza A subtypes currently circulating among humans are influenza A(H1N1) and influenza A(H3N2). Although influenza B possesses H and N proteins, they belong to one of the two lineages: Yamagata or Victoria.

The RNA encoding of influenza viruses easily mutate, resulting in changes to antigenic domains in the H and N surface proteins.

Antigenic drift is responsible for seasonal epidemics of influenza. If the antigenic domains change shape, antibodies that would normally match up to it no longer can, allowing the newly mutated virus to cause infection in the human body. Drift is the reason influenza vaccines need adjustment each season to counter currently circulating influenza viruses.

Antigenic shift is associated with pandemics. It occurs when the genetic re-assortment of RNA from two different strains of influenza A results in the abrupt appearance of an influenza A virus with novel H or N proteins. This genetic change enables the influenza strain to jump from one species to another, including humans (1). Regardless of the species in which it occurred, antigenic shift is only detected in human populations if the resultant virus is transmitted to people and causes disease.

Reservoir

The natural reservoir for influenza A viruses are wild aquatic birds, particularly ducks and other waterfowl. As the virus is generally transmitted between birds via the faecal-oral route, these migratory water birds can potentially facilitate transmission of influenza over long distances and to other birds, animals or human populations (2).

Additionally, humans, pigs and horses are naturally hosts of influenza A virus. Influenza A viruses co-circulate in human populations. This is especially the case in winter months in temperate climates. In more tropical climates, influenza seasons are less well defined, last longer and peaks coincide less frequently with winter months than in temperate climates (3). In the above instances, the human populations are reservoirs. Similarly, human populations are reservoirs for influenza B viruses.

Although influenza B and influenza C viruses are primarily pathogens of humans, other mammals may also be infected by these viruses.

Mode of transmission

Influenza viruses are most commonly spread from person-to-person by inhalation of infectious respiratory droplets produced by an infected person while talking, coughing or sneezing. Aerosol transmission is less usual, but can occur within confined spaces and during aerosol generating procedures.

Transmission of influenza viruses can also occur through direct and indirect (fomite) contact. Influenza viruses may remain viable on hands for up to five minutes and persist on hard surfaces for 1-2 days.

Incubation period

The incubation period for infection with influenza is most commonly 2-3 days with a range from 1-7 days.

Infectious period

Patients may shed influenza virus and therefore be infectious for up to 24 hours prior to onset of symptoms and up to seven days after onset of symptoms. Children may shed virus for ten days or more, and immunocompromised persons may shed virus for weeks.

In adults, shedding of influenza virus peaks in the first two days after onset of symptoms then reduces to low levels by five days after onset of symptoms. Not all cases of influenza present with fever, but when present, it correlates with viral shedding. Shedding of the influenza virus is more likely when respiratory symptoms are present.

Adult influenza patients are considered no longer infectious 24 hours after the resolution of fever without anti-pyretic medication provided either:

1. 72 hours have elapsed since commencing antiviral medication
OR
2. 5 days have elapsed from onset of respiratory symptoms.

For infection prevention and control purposes, maintain precautions for longer periods for children and immunocompromised persons with influenza.

The reduction in viral shedding as a result of antiviral treatment is dependent on the time to commencement of therapy after symptom onset. Delayed administration of antiviral therapy (>48hours) diminishes its impact on viral shedding and symptom resolution.

Clinical presentation and outcome

Influenza illness can range from asymptomatic infection to severe disease, such as pneumonia, and even death. Symptoms typically include fever (usually 38°C or greater), rhinorrhoea, chills, cough, headache, myalgia, sore throat and fatigue (4). Diarrhoea and/or vomiting may also occur, more commonly in children.

Influenza presentation in elderly persons may be atypical; fever may be absent and may have atypical signs and symptoms such as anorexia, mental status changes, or unexplained fever.

Influenza infection is usually confined to the upper respiratory tract, but can also involve the lower respiratory tract causing viral pneumonia. Pneumonia can also occur as a result of a secondary bacterial infection. In patients with underlying chronic obstructive lung disease or congestive heart failure, worsening respiratory or cardiac status may be unrecognised complications of influenza.

Serious complications from influenza can develop in some people, including very young children, the elderly, pregnant women, people who are immunocompromised, and those with pre-existing respiratory, cardiac and endocrine disease, and may cause death in healthy adults and children. Acute respiratory distress syndrome (ARDS) may develop in some patients several days after disease onset (5).

Vaccination of persons at increased risk of severe disease

The *Australian Immunisation Handbook* (6), recommends that people who are at increased risk of developing complications from influenza should receive annual influenza vaccination. Under the [National Immunisation Program](#) (NIP), (beta.health.gov.au/initiatives-and-programs/national-immunisation-program) the following groups are eligible for free influenza vaccine:

- Persons aged 65 years and over
- People aged ≥6 months with predisposing medical conditions, such as chronic cardiac or respiratory disease, chronic neurological or immunocompromising conditions placing them at risk of serious complications of influenza (7)
- Aboriginal or Torres Strait Islander children aged 6 months to less than 5 years, and 15 years and over (8); and
- Pregnant women (at any stage of pregnancy)

Children aged less than 5 years infected with influenza have high notification and hospitalisation (9) rates and therefore can be considered at increased risk. Free vaccine may be available for this age group under state-based programs.

There are a number of at-risk groups that influenza vaccine is strongly recommended and should be actively promoted although they may not be eligible for free vaccine under the NIP. These groups are listed in the *Australian Immunisation Handbook* (6).

Disease occurrence and public health significance

In Australia, influenza epidemiology is characterised by seasonal epidemics of type A and/or B virus, which peak during the winter months in temperate areas, with low rates of detection sustained during inter-epidemic months (10). Activity and disease severity varies from year to year, dependent on the circulating virus, level of immunity of the population (from vaccination and past infection), and effectiveness of the vaccine. In years where the circulating strain is predominantly influenza A (H3N2), elderly groups are more heavily impacted, while in influenza A(H1N1) or influenza B circulating years, children, pregnant women and younger adults have a proportionately increased notification rate.

Over the past century, influenza pandemics have been observed in 1918 (H1N1), 1957 (H2N2), 1968 (H3N2), and most recently in 2009 (H1N1) following emergence of novel influenza A subtypes. The 2009 pandemic was associated with a marked increase in notifications in Australia, which returned to pre-pandemic rates the following year (11). Thereafter, increasing notifications have been observed, which have exceeded 2009 pandemic rates between 2014 and 2017 (10, 11), and have been partly attributed to increased testing and a shift to predominantly polymerase chain reaction (PCR)-based detection methods (12).

On average each year in Australia, seasonal influenza results in an estimated 3,500 deaths, (13) and over 300,000 General Practitioner (GP) consultations and 18,000 hospitalisations (14), although these are recognised as underestimates of the true impact. As previously highlighted, certain population groups are at increased risk of severe disease, with significantly higher rates of influenza notification, hospitalisation and mortality observed in the elderly, children less than 5 years of age, and Aboriginal and Torres Strait Islander peoples. (6, 10, 11) Australian studies have previously estimated that influenza causes at least 13,500 hospitalisations and 3,000 deaths in people aged over 50 years (15), and approximately 10–15 deaths in children <5 years of age from influenza-related complications, each year.

For the latest information on seasonal influenza incidence, severity, transmission and virology in Australia, refer to the:

- [National Influenza Surveillance Report](http://www.health.gov.au/flureport) (www.health.gov.au/flureport)
- [National Notifiable Diseases Surveillance System \(NNDSS\) annual reports](http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-pubs-annlrpt-nndssar.htm) (www.health.gov.au/internet/main/publishing.nsf/Content/cda-pubs-annlrpt-nndssar.htm)

3. Routine prevention activities

Vaccination

Annual seasonal vaccination is the most important measure to prevent influenza and its complications thus decreasing morbidity and mortality (6). While influenza vaccine effectiveness can vary, vaccination reduces the risk of influenza illness in the overall population when the circulating influenza viruses are matched to the influenza vaccine.

Influenza vaccines can change from year to year as new strains of influenza virus appear. The influenza virus composition of vaccines for use in Australia is determined annually by the Australian Influenza Vaccine Committee following recommendations by the World Health Organization (WHO) based on global influenza epidemiology.

[The Australian Immunisation Handbook \(6\)](#) recommends annual vaccination for anyone aged 6 months or over is desired to reduce the likelihood of becoming ill and particularly for people with medical conditions that put them at risk of severe disease and complications of influenza and for people with occupational risk (see [Section 2: Persons at increased risk of disease](#)).

Currently in Australia, only inactivated vaccines are available. Inactivated influenza vaccines contain three ('trivalent' - two A subtypes and one B lineage) or four virus strains ('quadrivalent' - two A subtypes and two B lineages).

For adults aged 65 years and older, there are two higher-immunogenicity trivalent vaccine formulations available and funded under the NIP; one a 'high dose' vaccine and another containing an adjuvant ([16](#), [17](#)).

Prevention

Prevention activities should include:

1. Vaccination: community wide coverage of those aged 6 months and over
2. Public messages to encourage the following:
 - Annual vaccination, especially for those at risk of severe disease, using a "never too late" approach
 - Inform people at risk for severe disease to seek prompt medical assessment
 - Increase frequency of hand hygiene, surface cleaning, and correct cough/sneeze etiquette
 - People with Influenza-like illness (ILI) to limit use of, or avoid public transport and self-exclude from school, childcare, work or public gatherings.
 - People with an ILI should not visit family or friends in residential care facilities or hospitals.
3. Targeted messages:
 - Remind health care providers that people with ILI who are at increased risk of severe disease should be medically assessed, as appropriate
 - Strongly encourage vaccination of health care workers (HCWs).
4. Use of antiviral medication, as appropriate (see also [Section 12 - Special situations](#)).

Note. School and childcare closures and exclusions related to potential exposure are not generally recommended for seasonal influenza outbreaks.

Control

The focus of public health responses will be on control of outbreaks in high-risk settings, such as residential care facilities, correctional facilities, boarding schools, special needs schools for children with disabilities and Aboriginal and Torres Strait Islander communities.

For further information, refer to the [Guidelines for the Prevention, Control and Public Health Management of Influenza Outbreaks in Residential Care Facilities in Australia](#) ([18](#)).

For infected individuals, measures such as hand hygiene, good respiratory and cough etiquette, voluntary home isolation and cleaning of commonly touched surfaces should help reduce further transmission of influenza.

For information about infection control of hospitalised cases, refer to [the Australian Guidelines for the Prevention and Control of Infection in Healthcare](#) ([19](#)).

4. Surveillance objectives

The objectives of seasonal influenza surveillance are to:

- Determine, monitor and report the number of cases and geographical spread of influenza
- Detect outbreaks in high risk settings and trigger appropriate control measures

- Identify and characterise influenza epidemics and stage in the community
- Determine the severity of disease to inform appropriate disease control measures and health service planning
- Facilitate further typing of influenza strains circulating in the community to inform vaccine development
- Determine resistance patterns of influenza circulating in the community to inform antiviral treatment recommendations
- Better understand the epidemiology of the disease through the collection, collation and analysis of data
- Facilitate further studies, where necessary, to investigate the epidemiology, clinical features, and vaccine effectiveness.

During the Australian influenza season, the Australian Influenza Surveillance Report is published fortnightly and available at the [Department of Health website](http://www.health.gov.au/flureport) (www.health.gov.au/flureport). Some jurisdictions publish local reports.

The National Influenza Surveillance Scheme utilises several sentinel surveillance systems to enhance NNDSS data by providing information on the severity of influenza activity, virological characteristics and population susceptibility ([20](#)).

5. Data management

Laboratory-confirmed cases of influenza, including type and subtyping data (if available) should be entered into jurisdictional notification databases usually within one (up to five) working days and relayed to the NNDSS through routine processes.

Cases are counted in the jurisdiction of the case's usual residence. The established CDNA protocol for cross-border notification is used when appropriate.

An influenza infection can occur concurrently with, or subsequent to, infection by another influenza virus. In the instance of subsequent infections, each infection should be notified. In the instance of co-infections, the infection should be notified only once.

6. Communications

Positive influenza laboratory test results should be notified to the relevant central or regional Public Health Unit (PHU) or state/territory disease control unit in accordance with jurisdictional notification requirements and cross-border protocols.

When notified of an outbreak of influenza in a high-risk setting, PHUs should inform the central state/territory disease control unit in accordance with priority. Liaison may be required with specialist infection control and environmental health protection units.

The CDNA and the National Incident Room (Department of Health), should be informed of cases of influenza caused by a novel virus subtype as soon as possible (within 24 hours). The Department of Agriculture and Water Resources Chief Veterinary Officer is notified through veterinary public health representation on CDNA.

Confirmed influenza cases caused by a novel virus subtype detected in people who work with pigs or poultry, should be investigated in collaboration with state/territory Department of Primary Industry veterinary authorities and may involve a work safety authority. With informed permission from the case, these notifications should use an encoded identifier for the case, and the name and location of the workplace.

7. Case definition

Reporting

Only **confirmed cases** should be notified.

Confirmed cases

A confirmed case requires **laboratory definitive evidence** only.

Laboratory definitive evidence

1. Isolation of influenza virus by culture from appropriate respiratory tract specimen
OR
2. Detection of influenza virus by nucleic acid testing from appropriate respiratory tract specimen
OR
3. Laboratory detection of influenza virus antigen from appropriate respiratory tract specimen
OR
4. IgG seroconversion or a significant increase in antibody level or a fourfold or greater rise in titre to influenza virus
OR
5. Single high titre by complement fixation test (CFT) or haemagglutination inhibition (HAI) assay to influenza virus.

Case definitions can be found on the [Department of Health website](http://www.health.gov.au/internet/main/publishing.nsf/Content/cdna-casedefinitions.htm) (www.health.gov.au/internet/main/publishing.nsf/Content/cdna-casedefinitions.htm)

Influenza-like illness (ILI)

Diagnoses of ILI may be used for routine surveillance of influenza activity in the community, case-finding in outbreaks and clinical diagnosis and treatment. The sensitivity and specificity of ILI case definitions vary, depending on inclusion and exclusion criteria. The positive predictive value of ILI diagnosis will depend on the current prevalence of influenza in the setting under surveillance and vaccination status of the person.

There are many definitions of ILI. The WHO case definition for ILI is an acute respiratory infection with measured fever $\geq 38^{\circ}\text{C}$ and cough, with onset within the last 10 days. Most case definitions of ILI stipulate rapid onset of illness, with fever and cough. Other criteria may include chills or rigors, myalgia, fatigue, headache, sore throat and coryza. In the elderly, fever may be absent, and confusion, anorexia and breathlessness may be the only signs of influenza infection.

8. Laboratory testing

Testing guidelines

The preferred test is a direct test; that is, detection of influenza virus antigens or influenza viral nucleic acid from a nasal or throat swab (see [Section 7 Case definition](#)).

Isolates of influenza should be typed (influenza A or B), and subtyped if possible (e.g. A/H1, A/H3).

Laboratory testing of all potential cases of influenza is neither required nor desirable for public health management.

To monitor changes in circulating viruses across Australia, isolates from both representative cases of influenza and clinically or microbiologically unusual cases of influenza should be provided to the WHO Collaborating Centre (WHOCC) for Reference and Research on Influenza for antigenic characterisation and antiviral resistance testing.

Rapid NAT tests

Rapid (45-90 minutes) NAT test systems are available in Australia that detect influenza A and B. These can be performed in laboratories without other molecular testing facilities, and offer comparable sensitivity and specificity to usual influenza-specific or multiplex NAT assays. A positive influenza rapid NAT result meets the surveillance case definition for notification. Rapid NAT results do not require other laboratory tests for confirmation, but may be submitted for subtyping.

Point of care (POC) antigen tests

POC antigen tests can be performed in the surgery/clinic, at or near the time of consultation, although in Australia POC antigen tests are usually done in the laboratory rather than at time of consultation. Negative results of the POC antigen tests should be treated with caution due to their relatively low sensitivity compared to nucleic acid tests (NAT). A positive POC antigen test result has a high predictive value for influenza but only meets the surveillance case definition for notification if the POC test is conducted within an accredited laboratory quality management framework. Further testing should be sought if influenza is suspected on clinical signs in the presence of a negative POC test result ([21](#)).

9. Case management

Follow up by PHU is not routinely required for single notifications unless a case has a novel influenza subtype or untypable isolate, particularly if the case has died.

Public health actions focus on outbreaks in high-risk settings (see [Section 12 - Special situations](#)).

Response times

Act as soon as possible, generally within one working day for outbreaks in high-risk settings such as boarding schools, special needs schools for children with disabilities, residential care facilities, Aboriginal and Torres Strait Islander communities, or in health care facilities (see [Section 12 - Special situations](#)).

Respond immediately (within 24 hours) following receipt of WHOCC results identifying a novel influenza subtype or an untypable influenza isolate.

Response procedure

Case investigation

Where a novel influenza subtype or an untypable isolate is identified by the WHOCC, an interview with the case is required to confirm the date of onset of illness, occupation, location of exposure, interstate/overseas visits or visitors, any known infections among contacts, and anyone still ill. If the case has died, the next-of-kin is interviewed.

Case investigation forms are at Appendices [1](#) and [2](#).

Exposure investigation

Investigation by the PHU is not routinely required for single notifications.

Case treatment

The medical management of individual cases is the responsibility of the treating doctor. The PHU is not involved for single notifications.

For further information regarding case treatment, refer to the Therapeutic Guidelines – [Influenza \(22\)](#).

Education

Not routinely required by the PHU for single notifications. Infection control education of a case should be managed by their treating doctor, including advice to stay at home while infectious. See Seasonal Influenza (Flu) Fact Sheet ([Appendix 3](#)). Fact sheets are also available on jurisdictional websites.

Isolation and restriction

Isolation and restriction is not routinely required by PHU for single notifications. In general, health care providers should counsel patients who have influenza or ILI to stay at home and keep away from work, school and crowded areas or public gatherings until the symptoms have resolved.

Active case finding

Not routinely required by PHU for seasonal influenza. See [Section 12 - Special situations](#).

10. Environmental management

Influenza viruses are commonly spread by inhalation of infectious droplets produced by an infected person while talking, coughing and sneezing. Influenza virus transmission may also occur through contact with contaminated surfaces or objects (fomite).

Infection prevention and control

The risk of further transmission of influenza can be minimised by having readily available hand hygiene materials, increased surface cleaning and laundering or disposal of soiled articles.

For further information, refer to the Guidelines for the Prevention, Control and Public Health Management of Influenza Outbreaks in [Residential Care Facilities](#) in Australia (18) and the [Australian Guidelines for the Prevention and Control of Infection in Healthcare](#) (19).

Waste

Used tissues should be disposed of in general waste.

11. Contact management

Contact definition

Definitions of an influenza contact are only required for some high-risk settings (see [Section 12 - Special situations](#)).

Identification of contacts

No public health action required except in high-risk settings (see [Section 12 - Special situations](#)).

Prophylaxis

Antiviral prophylaxis may complement but does not replace other outbreak control measures, such as droplet and contact precautions, hand hygiene, cohorting or isolating ill residents and correct cough/sneeze etiquette.

For further information on antiviral treatment, refer to the Therapeutic Guidelines – [Influenza \(22\)](#).

Education

Not routinely required by the PHU for single notifications.

Isolation and restriction

Not required unless described in special situations below ([Section 12 - Special situations](#)).

12. Special situations

The public health response to outbreaks of influenza is determined by state or territory legislation, local reporting requirements and available resources. Public health agencies will seek to determine the nature of the outbreak to define their role in the investigation.

Schools and childcare settings are prone to rapid transmission of influenza. Vaccination should be strongly encouraged for children and staff of schools and childcare centres, especially for those at risk of severe disease.

Children or staff with ILI or confirmed influenza should not attend school or childcare while infectious. If a child or staff member becomes ill with an ILI they should be sent home as soon as possible.

If an outbreak of ILI is reported in school or childcare settings, the PHU should assess the extent of the outbreak and may:

- Issue a generic letter for the school/childcare setting to use for parents – informing of the outbreak, reinforcing control measures (stay away if symptomatic, increase hygiene, consider vaccination, etc.), and urging children and staff at high risk of complications to see their doctor promptly, if ill with ILI
- Provide fact sheets and information to staff and students, including website links advising of practical control measures (cough and sneezing etiquette, hand hygiene, stay home if sick).

Boarding schools - because of the close nature of students in residence, outbreaks may spread rapidly and special control measures may be required including:

- Sick children in boarding schools should be sent home, if feasible, but preferably not via public transport
- Otherwise, sick children should be isolated or cohorted

Special needs schools for children with disabilities - students may have chronic illnesses and be at risk of severe complications from influenza, so special control measures may be required. The PHU

should consider recommending prophylactic antiviral medication to control influenza spread in specific instances.

Note: Full or partial school closures are not generally recommended on public health grounds, although it is recognised that closures may be considered and implemented on logistical grounds by the school.

For further information, refer to the Therapeutic Guidelines – [Influenza \(22\)](#).

Outbreaks of ILI in residential care facilities

In some residential care settings, antivirals may be used as prophylaxis. Consideration and decisions on antiviral prophylaxis should be made by the treating doctor/s and outbreak management team in collaboration with, or after advice from, the state/territory public health authorities. If antiviral prophylaxis is used, all asymptomatic residents (regardless of vaccination status) and all unvaccinated staff should receive it at the same time.

Outbreaks of influenza or ILI in residential care facilities should be managed with close reference to the CDNA document: [A Practical Guide to assist in the Prevention and Management of Influenza Outbreaks in Residential Care Facilities in Australia \(18\)](#).

Health care workers

Health Care Workers (HCW) with ILI may require special consideration. Although patient-care may be adversely impacted by a reduction in HCW numbers due to absences while ill, an infectious HCW can expose vulnerable patients to influenza virus, and may facilitate a broader outbreak in a healthcare setting.

Hospital-employed HCWs infected with influenza should comply with hospital occupational health and safety and infection control guidelines.

Further information is available in the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2010\) \(19\)](#).

Prevention

Seasonal influenza vaccination is an important routine prevention measure against healthcare-associated transmission of influenza. The WHO, United States Centres for Disease Control and Prevention Advisory Committee on Immunization Practices (ACIP), and the Australian Technical Advisory Group on Immunisation all recommend annual seasonal influenza vaccination of HCWs.

It is recommended that all HCWs with patient contact have seasonal influenza vaccination (6).

Management of healthcare workers with ILI or influenza

During influenza seasons, healthcare facilities should ensure HCWs:

- are alert for symptoms of ILI
- exclude themselves from work immediately, if they develop an ILI, and report the illness to their supervisor in accordance with local policy,
- with ILI are assessed for influenza and other respiratory viruses promptly (by general practitioner or occupational health clinic).

Contact tracing

Contact tracing is not routinely required following diagnosis of confirmed flu in a HCW, unless the HCW was working in a high risk setting with vulnerable patients.

Outbreaks in healthcare facilities

Where a healthcare facility has an infection control service, that service would lead an outbreak management team. However, for outbreaks in other healthcare facilities, an outbreak management team should be convened. The team would include a senior facility manager, an infection control practitioner and appropriate clinical staff. The team may seek advice and guidance from PHU.

Healthcare facilities include hospitals, clinics, outpatient care centres and specialised care centres, such as psychiatric care centres and birthing centres.

Control measures may include:

- An increase in appropriate infection control measures
- Case finding and treatment
- Isolation and cohorting of patients
- Prophylaxis for patients and staff
- Distribution of information letters and fact sheets

Outbreaks in Aboriginal and Torres Strait Islander communities

Key factors in assessing influenza risk in Aboriginal and Torres Strait Islander communities may include:

- A high prevalence of medical conditions that may place individuals at risk for severe disease from influenza
- Restricted access to hygiene aids (such as soaps), overcrowding, and environmental conditions that may facilitate disease transmission
- (Reduced) access to diagnosis and health care due to remote locale, lack of transport and poor electronic communications infrastructure
- Primary care services availability and capacity
- Unwell people may present late in disease progression
- The need for prompt laboratory tests, such as point of care tests, to confirm the diagnosis of influenza as the cause of respiratory disease.

The clinical and public health response to suspected or confirmed influenza outbreaks in Aboriginal and Torres Strait Islander communities should:

- Work collaboratively with local health services and community leaders
- Consider the use of influenza vaccine as a disease control measure
- Provide culturally appropriate pictorial fact sheets, advising of practical control measures (cough and sneezing etiquette, hand hygiene, isolate if symptomatic)
- Encourage early presentation of people with ILI to a medical service, particularly vulnerable community members*
- Test, and if appropriate, treat people with ILI who fit the clinical case definition, until laboratory confirmation of the cause of the outbreak
- Reduce the risk of severe complications by clinically appropriate treatment of ILI cases with specific clinical criteria identifying them as vulnerable* or who have moderate to severe disease
- Consider antiviral prophylaxis for vulnerable community members who were close household contacts of an infectious ILI case
- Actively promote uptake of seasonal influenza vaccine as a prevention and control measure.

* *Note: during outbreaks in Aboriginal and Torres Strait Islander communities, vulnerable people include all those with risk factors referred to in [Section 2 The disease](#). Children in the 'failure to thrive' category are also considered vulnerable to complications of influenza.*

Broad use of antiviral prophylaxis in a community setting requires consultation between the clinician, PHU and central communicable disease control unit within the relevant state or territory health department.

Outbreaks on cruise ships or other passenger vessels

Cruise ship travel is characterised by the presence of many people in closed and semi-closed settings, which facilitates the transmission of influenza and other respiratory viruses from person-to-person through droplet and contact spread.

Prior to docking, a ship's captain/master should notify the Department of Agriculture and Water Resources (Agriculture Biosecurity Officers) of any ill travellers ([23](#)).

Prevention:

Cruise ship operators are recommended to consider:

- Screening incoming passengers for ILI by questionnaire, and assessing and managing those who screen positive
- Actively promoting vaccination for passengers prior to embarkation, especially those at high risk of complications of influenza identified in the [The Australian Immunisation Handbook \(6\)](#).
- Providing frequent messages to all on board about hand hygiene, respiratory hygiene/cough etiquette, and the need for medical assessment of respiratory symptoms or fever
- Ensuring ready access to hand hygiene measures throughout the ship (alcohol-based hand rub; soap and running water)
- Increasing awareness among passengers and crew, especially people vulnerable to severe influenza, that a cruise ship journey increases the risk of encountering respiratory viruses.

Management:

In managing an outbreak of respiratory disease, on a cruise ship, the following should be considered:

- Encourage crew and passengers to promptly report ILI to the ship's medical clinic
- Isolate infectious passengers and crew who meet the clinical case criteria for ILI, in single cabins, wherever possible (see [Section 2 The disease](#))
- Implement measures to facilitate good respiratory hygiene (tissues, fact sheets, cough etiquette, waste disposal information, self-isolation), hand hygiene, and environmental cleaning to reduce transmission
- On leaving the ship, advise passengers with ILI to voluntarily isolate themselves while infectious, and seek medical advice if required
- No restrictions are placed upon well contacts.

Cases among travellers on aeroplanes

Close contact in boarding and disembarking queues and aircraft cabins can facilitate the spread of influenza viruses from person-to-person through droplet spread or contact with contaminated surfaces.

Passengers with ILI should ideally not travel by public transport, including commercial flights. Incoming passengers who have developed symptoms during a flight should wear a surgical mask (if available), practice good cough and hand hygiene and avoid close contact with others, as much as possible.

No restrictions are placed upon well contacts, and contact tracing is not required.

Captains of aircraft are required to notify the Department of Agriculture and Water Resources (Agriculture Biosecurity Officers) of ill travellers who are on an aircraft before it lands (24).

13. Jurisdiction specific issues

[Links to State and Territory Public Health Legislation, the Biosecurity Act 2015 and the National Health Security Act 2007.](http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-state-legislation-links.htm) (www.health.gov.au/internet/main/publishing.nsf/Content/cda-state-legislation-links.htm)

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15. Appendices

Appendix 1: Seasonal Influenza Case Investigation Form

Appendix 2: Seasonal Influenza Case Investigation Form – death

Appendix 3: Seasonal Influenza (Flu) – Fact Sheet

Appendix 4: PHU Checklist

e) Recent interstate/overseas visitors: Record place of origin & ILI in visitor, if known.

Visitor place of origin: _____ ILI? Y N

Date of visit: Start: ___/___/___ End: ___/___/___

f) ILI among known contacts:

Anyone still ill? Y N

If yes, names, phone numbers:

5. Outcome of infection Recovered / Hospitalised / Died? (Please circle)

6. Willing to provide further test sample if required? Y N

7. Review

- Review case management to ensure relevant exclusions are in place
- inform person of requirement to inform other agencies, where needed
- notify infection control professionals, where appropriate.
- Ask if the person has any questions.

8. Provide (reaffirm) own Name, PHU name and telephone number.

Thank person for cooperation.

Comments:

Sign _____ Date ___/___/___

Appendix 2: Seasonal Influenza Case Investigation Form – death

(This page contains form/s that are intended to be paper based that you can download and complete. If you are using any assistive technology and are unable to use the form please contact your local public health authority using the Online form and feedback)

For use in instances where a novel influenza subtype or an untypable isolate is identified by the WHO Collaborating Centre for Reference and Research on Influenza and the patient has died.

1. Obtain permission from treating medical officer (essential); request name and contact details for next-of-kin. Ask if next-of-kin knows diagnosis, test result and cause of death.

2. Telephone next of kin Date ___/___/___ Time ___:___

3. Introduction: Greet, provide own Name, Public Health Unit name, & purpose of call.

Offer condolences, and apologise for intruding at a difficult time.

Explain the importance of the information required, notification process and confidentiality.

4. Confirm patient name, date of birth, and postcode PHU ID: _____

Name: _____ DOB ___/___/___ Postcode _____

5. Establish/confirm Date of onset of ILI: ___/___/___

6. Check symptoms

Fever Y N Sore throat Y N

Cough Y N Fatigue Y N

Muscle aches Y N Headache Y N

7. Occupation:

Health care worker? Y N

Involved with commercial live poultry OR pig handling? Y N

Obtain permission to inform DPI veterinary authorities of pig or poultry contact.

If yes to either question, record name and address of workplace.

Workplace name: _____

Workplace address: _____

8. Likely location of exposure: _____ (home state): Y N

Interstate/overseas visits? Y N

Location/s visited: _____ Date of return: __/__/__

9. Recent interstate/overseas visitors: Record place of origin & ILI in visitor, if known.

Visitor place of origin: _____ ILI? Y N

Date of visit: Start: __/__/__ End: __/__/__

10. ILI among known contacts:

Anyone still ill? Y N

If yes, names, phone numbers:

11. Outcome of infection Death

Establish/confirm Date of death: __/__/__

12. Official cause of death (coroner's report), if known _____

13. Review

- Review case management to ensure relevant exclusions are in place
- inform person of requirement to inform other agencies, where needed
- notify infection control professionals, where appropriate.
- Ask if the person has any questions.

14. Provide (reaffirm) own Name, PHU name and telephone number.

Thank person for cooperation.

Comments:

Sign _____ Date __/__/__

Appendix 3: Seasonal Influenza (Flu) – Fact Sheet

Influenza, commonly known as 'flu', is a respiratory infection of the nose, throat and lungs. Flu is caused by influenza viruses that are easily passed from person-to-person.

In areas with a temperate climate, seasonal influenza occurs in winter, but in more tropical areas flu circulates throughout the year.

How influenza is spread?

Influenza viruses spread when someone with the flu coughs or sneezes, creating airborne droplets that can land in the lining of the nose, throat or in the mouth of another person. Droplets can spread through the air over short distances.

Flu can also be spread by contact with hands, tissues, surfaces and other articles soiled by nose and throat discharges.

Signs and symptoms

Symptoms of all types of influenza are similar, and may include:

- Rapid onset of fever
- Cough
- Sore throat
- Headache
- Muscle aches
- Fatigue
- Sneezing
- Running nose.

Most people recover from the flu within a week, but cough and fatigue may persist.

Influenza is a serious disease that can cause infection of the lung (pneumonia) and other complications, even death. Some people are more at risk of these complications, particularly:

- Young children
- People aged 65 years and over
- Pregnant women
- Aboriginal and Torres Strait Islander Australians
- People with predisposed medical conditions such as lung and heart diseases, or diabetes etc.

Diagnosis

Laboratory tests confirm whether a person has the flu. A swab taken from the nose or throat is the best specimen to test. However, not everyone with symptoms needs to be tested. A doctor may diagnose flu from clinical signs, especially during the 'flu season'.

Incubation period

It takes an average of 2-3 days (range 1-7 days) for seasonal flu to show after a person has caught the flu virus.

When are people infectious?

Someone with the flu can infect others from 1 day before their symptoms begin, until 8 days later. Most people are highly infectious on the first 2 days after symptoms appear, and this drops to low levels by 5 days.

Some people, especially children and adults with weakened immune systems, might be infectious for longer than 7 days.

Treatment

Most people do not need specific treatment for influenza. They recover with rest, plenty of fluids and using paracetamol to relieve fever and pain.

People should seek medical advice if they experience any of the following:

- Symptoms that are getting worse
- Shortness of breath, or difficulty breathing
- Confusion
- Vomiting that prevents them keeping liquids down
- Dehydration symptoms (dizziness on standing, much less urine than normal).

Prevention

- Annual vaccination is the most important protection against catching flu. Vaccination reduces the risk of severe complications of the flu. It also reduces the chance of passing the flu to those who are at risk of complications. A new flu vaccine is needed each year because flu vaccines are changed to try to match current strains of the flu. Annual vaccination is recommended for anyone aged 6 months or older who wishes to reduce their risk of becoming ill with the flu. Some people qualify for free seasonal flu vaccine; ask your doctor about this.
- Hand washing reduces the spread of influenza. Wash hands using soap and water or an alcohol based hand rub after sneezing or coughing, and after contact with articles soiled by nose and throat discharges.
- Wipe frequently-touched surfaces regularly, using a cloth dampened with detergent, or a large alcohol wipe.

- Cover coughs and sneezes with a tissue or the elbow of your arm. Drop soiled tissues straight into a rubbish bin, then wash your hands.
- Exclude children with flu from school or childcare, and adults from work, until there has been no fever for 24 hours (without fever-reducing medicine).
- Keep away from others when ill; where possible, do not use public transport.

Influenza and pregnancy

Pregnant women are at higher risk of complications from the flu. The seasonal flu vaccine is safe to receive in any trimester of pregnancy. Through the National Immunisation Program, all pregnant women qualify for free seasonal flu vaccine. The best protection against flu for pregnant women is to have the seasonal flu vaccine.

Useful links

- [Immunise Australia Program](http://www.immunise.health.gov.au): www.immunise.health.gov.au
- [Wash, wipe, cover... don't infect another](http://www.sahealth.sa.gov.au/washwipecover): www.sahealth.sa.gov.au/washwipecover
- [Hand hygiene](http://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/healthy+living/protecting+your+health/preventing+disease+and+infection/hand+hygiene):
www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/healthy+living/protecting+your+health/preventing+disease+and+infection/hand+hygiene
- [Exclusion periods](http://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/health+topics/health+conditions+prevention+and+treatment/infectious+diseases/exclusion+from+childcare+preschool+school+and+work) from childcare, preschool, school and work:
www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/health+topics/health+conditions+prevention+and+treatment/infectious+diseases/exclusion+from+childcare+preschool+school+and+work
- How to [wash and dry hands](http://www.health.gov.au/internet/main/publishing.nsf/Content/how-to-wash-and-dry-hands):
www.health.gov.au/internet/main/publishing.nsf/Content/how-to-wash-and-dry-hands
- The [flu and you](http://www.health.gov.au/internet/main/publishing.nsf/Content/the-flu-and-you-brochure): www.health.gov.au/internet/main/publishing.nsf/Content/the-flu-and-you-brochure
- [Transmission](http://www.health.gov.au/internet/main/publishing.nsf/Content/transmission-of-respiratory-diseases-and-managing-the-risk) of respiratory diseases and managing the risk:
www.health.gov.au/internet/main/publishing.nsf/Content/transmission-of-respiratory-diseases-and-managing-the-risk

Appendix 4: PHU Checklist

Patient ID number: _____

Contact the patient's doctor to:

- Ascertain patient's history
- Obtain patient's contact details and permission to contact the patient
- Confirm results of relevant pathology tests.

Contact laboratory to:

- Check samples received and obtain any outstanding results.

Confirm case

- Assess information against case definition, classify case.

Contact patient's employer (with informed permission) to:

- Liaise with employer for HCW cases in high risk settings with vulnerable patients.

Detection of a novel subtype or an untypable influenza isolate:

For cases requiring investigation, contact the patient (or care giver) to:

- Confirm onset date and symptoms of illness
- Identify likely source of infection
- Check infection control measures are in place
- Identify contacts and obtain their contact details
- Complete a Seasonal Influenza Case Investigation form
- Provide Seasonal influenza (Flu) Fact sheet.

Other issues (novel subtype):

- Where appropriate, report workplace location details from human cases to a jurisdictional animal health agency for risk assessment or investigation.